

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. *(Currently Amended)* Apparatus for frequency content separating an input signal, said apparatus comprising:

(i) a plurality of frequency splitting stages, each stage including one or more up-converter and down-converter pairs, and

an up-converter and down-converter pair ~~serving~~ arranged to receive a complex input signal representing an input bandwidth and to output a first complex output signal representing an upper portion of said input bandwidth and a second complex output signal representing a lower portion of said input bandwidth, said first portion and said second portion being contiguous and together representing said input bandwidth ~~portion~~.

2. *(Original)* Apparatus as claimed in claim 1, wherein said complex input signal spans a frequency range of $-F$ to $+F$.

3. *(Original)* Apparatus as claimed in claim 2, wherein said first complex output signal and said second complex output signal both span a frequency range of $-F/2$ to $+F/2$.

4. (*Currently Amended*) ~~Apparatus as claimed in claim 1,~~ Apparatus for frequency content separating an input signal, said apparatus comprising:

a plurality of frequency splitting stages, each stage including one or more up-converter and down-converter pairs, and

an up-converter and down-converter pair arranged to receive a complex input signal representing an input bandwidth and to output a first complex output signal representing an upper portion of said input bandwidth and a second complex output signal representing a lower portion of said input bandwidth, said first portion and said second portion being contiguous and together representing said input bandwidth,

wherein between frequency splitting stages, said apparatus is arranged to combine said first complex output signal and said second complex output signal ~~are combined~~ to form an interleaved complex signal for subsequent processing.

5. (*Original*) Apparatus as claimed in claim 1, wherein said first complex output signal and said second complex output signal each comprise a stream of digital sample values.

6. (*Currently Amended*) Apparatus as claimed in claim 4, ~~wherein~~ further comprising:

means for decimating each of said first complex output signal and said second complex output ~~are each decimated~~ to reduce sample rate prior to combination to form said interleaved complex signal.

7. *(Original)* Apparatus as claimed in claim 6, wherein said first complex output signal and said second complex output signal each have a complex output signal sample rate and said interleaved complex signal has an interleaved signal sample rate and said interleaved complex signal has an interleaved signal sample rate substantially equal to said complex output signal sample rate.

8. *(Original)* Apparatus as claimed in claim 1, wherein one or more of said up-converters and said down-converters comprises a finite impulse response filter.

9. *(Original)* Apparatus as claimed in claim 1, wherein one or more of said up-converters and said down-converters comprises a local oscillator generating a time varying coefficient signal by which sample signals are multiplied.

10. *(Original)* Apparatus as claimed in claim 9, wherein said coefficient signal has a predetermined set of values.

11. *(Original)* Apparatus as claimed in claim 10, wherein said predetermined set of values comprises -1 , $-\sqrt{2}/2$, 0 , $+\sqrt{2}/2$ and $+1$.

12. *(Original)* Apparatus as claimed in claim 10, wherein said predetermined set of values comprises -1 , 0 and $+1$.

13. *(Currently Amended)* Apparatus as claimed in claim 12, further comprising: sample signal multiplexers for selecting signals for combination arranged to perform ~~wherein multiplication by said coefficient values is performed by sample signal multiplexers selecting signals for combination.~~

14. *(Original)* Apparatus as claimed in claim 1, wherein said up-converter and said down-converter pairs are formed as a combined conversion unit with shared components.

15. *(Original)* Apparatus as claimed in claim 14, wherein said combined conversion unit includes a poly-phase filter.

16. *(Currently Amended)* A method of frequency content separating an input signal, said method comprising ~~the steps of:~~

(i) frequency splitting a complex input signal using a plurality of frequency splitting stages, each stage including one or more up-converter and down-converter pairs, and

an up-converter and down-converter pair ~~serving to receive~~ for receiving said complex input signal representing an input bandwidth and ~~to output~~ outputting a first complex output signal representing an upper portion of said input bandwidth and a second complex output signal representing a lower portion of said input bandwidth, said first portion and said second portion being contiguous and together representing said input bandwidth portion.